

Step Rate Test

UT 07-15 Injector

Antelope Creek Field

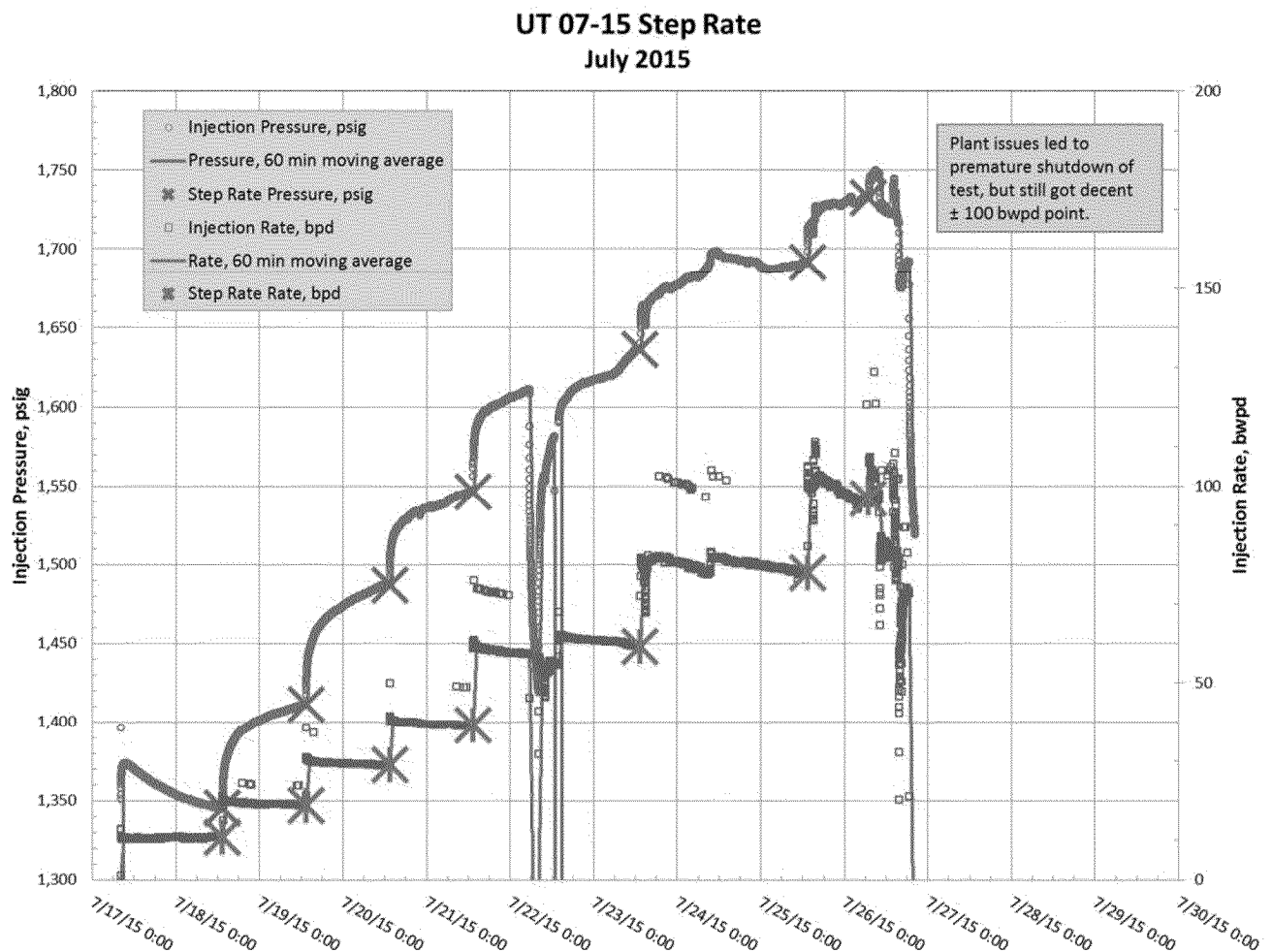
Duchesne County, UT

EPA Permit #: UT2736-07414

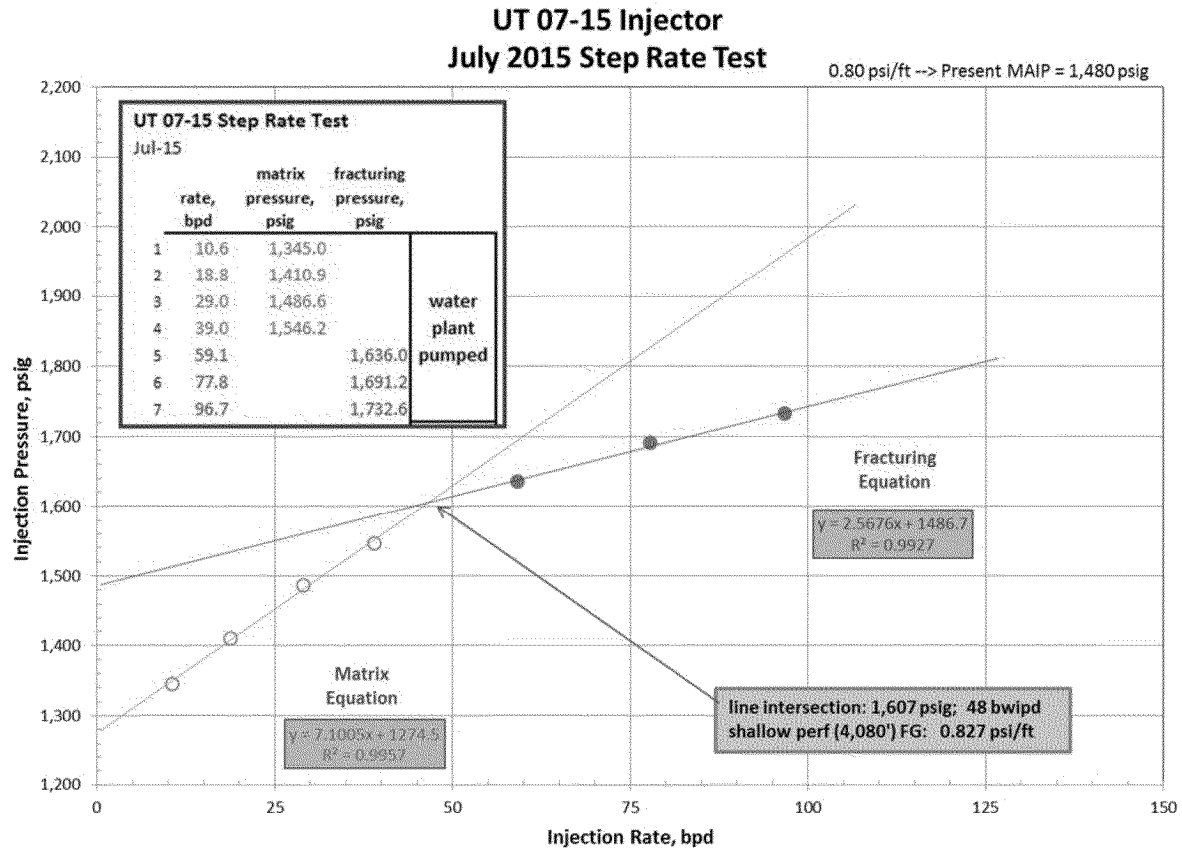
On July 17, 2015, Petroglyph Energy began a step rate test on the UT 07-15 Injector. This well has a Maximum Allowable Injection Pressure (MAIP) of 1,480 psig which was set based on a 0.80 psi/ft fracturing gradient to the top perforation at 4,080'. This step rate was run to determine the actual fracturing gradient.

The step rate test was performed from July 17-July 26, 2015. We have good digital data points with matrix and fracturing lines having $R^2 > 0.99$, indicating a good test. In general, each step was 24 hours in length, although we extended a couple tests to 48 hours, when we had interruptions in the test. Our final fracturing point, while agreeing with the data set, was cut short due to plant problems.

A Cartesian plot of the digitally recorded Halliburton meter data (1 minute increments):



The Step Rate chart:



The resultant step rate plot indicates a fracturing point intersection at:

1,607 psig

48 bwipd

FG: 0.827 psi/ft - to the top perf

Based on this test, we believe the MAIP should be adjusted upwards to 1,607 psig.

A spreadsheet with the data and graphs is enclosed.

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